

Amendments to the Claims:


Please cancel claims 4-7, 31, 32, 34-35 and 49-51. Please amend claims 8, 12, 18, 27 and 36. This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

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1. (Original) A method of operating a liquid feed fuel cell, comprising adding a quantity of perfluorooctanesulfonic acid to a fuel of the fuel cell.
2. (Original) The method of claim 1, wherein said perfluorooctanesulfonic acid is provided with a concentration of at least 0.0001 M.
3. (Original) The method of claim 2, wherein said perfluorooctanesulfonic acid is in the range of 0.0001 M to 0.01 Molar.
- 4.-7. (Cancelled)
8. (Currently Amended) ~~A fuel cell as in claim 4;~~ An aqueous organic fuel-feed fuel cell, comprising:  
a first electrode having a first polarity and wherein said first electrode has a surface which is formed with high surface area particles having a surface area greater than 200 m<sup>2</sup>/g, said particles formed of alloys including at least two different kinds of metals;  
a second electrode having a second polarity different than the first polarity;  
an electrolyte, comprising a proton-conducting membrane which is coupled to both said first and second electrodes; and

a circulating system, operating to circulate a first liquid organic fuel which is substantially free of acid-containing electrolytes into an area of said first electrode to cause a potential difference between said first and second electrodes when a second component is in an area of said second electrode;  
wherein said first electrode is formed of a porous material configured in a way to be wet by the organic fuel.

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9. (Original) A fuel cell as in claim 8, wherein one of said metals of said alloy is platinum.
10. (Original) A fuel cell as in claim 9, wherein said alloy is formed of platinum-ruthenium, with a composition varying from 5 to 90 atom % of platinum.
11. (Original) A fuel cell as in claim 10, wherein said alloy particles are unsupported.
12. (Currently Amended) A fuel cell as in claim 8 further comprising a ~~high surface area~~ carbon material for supporting said alloy particles.
13. (Original) An organic fuel cell, comprising:  
a first chamber;  
an anode electrode, formed in said first chamber, and including a first surface exposed to said first chamber, at least said first surface including an electrocatalyst and a wetting agent thereon;  
an electrolyte, operatively associated with said anode electrode in a way to allow proton-containing materials to pass from said anode into said electrolyte, said electrolyte comprising a proton conducting membrane; and  
a cathode electrode, operatively associated with said electrolyte, and having a second operative surface.

14. (Original) A fuel cell as in claim 13, wherein said second operative surface of said cathode electrode includes particles of electrocatalyst material thereon.
15. (Original) A fuel cell as in claim 14, wherein said electrocatalyst materials are materials optimized for electro-oxidation of a desired organic fuel.
16. (Original) A fuel cell as in claim 15, wherein said fuel is an aqueous methanol derivative which is free of acid component and said electrocatalyst is platinum-ruthenium.
17. (Original) A fuel cell as in claim 14, wherein said particles of electrocatalyst on said cathode are optimized for gas diffusion.
18. (Currently Amended) A fuel cell as in claim 17, wherein said particles include an electrocatalyst alloy mixed with a ~~Teflon~~ fluoropolymeric additive.
19. (Original) A fuel cell as in claim 17, wherein said particles include an electrocatalyst mixed with said wetting agent which is an additive to promote hydrophobicity.
20. (Original) A fuel cell as in claim 14, further comprising a pumping element operating to circulate said organic fuel past said anode electrode.
21. (Original) A fuel cell apparatus, comprising:  
a first chamber having surfaces for containing an organic aqueous fuel therein;  
an anode structure, having a first surface in contact with said first chamber, said anode structure being porous and capable of wetting the liquid fuel and also having electronic and ionic conductivity;  
an electrolyte, in contact with said anode structure, said electrolyte formed of a proton-conducting membrane;

a cathode, in contact with said electrolyte in a way to receive protons which are produced by said anode structure, conducted through said electrolyte to said cathode; and

a second chamber, holding said cathode, said second chamber including a second material including a reducible component therein.

22. (Original) A fuel cell as in claim 21, wherein said anode is formed of carbon paper with an electrocatalyst thereon.

23. (Original) A fuel cell as in claim 21, wherein said anode includes a hydrophilic proton conducting additive.

24. (Original) A fuel cell as in claim 22, wherein said electrocatalyst layer and said carbon support are impregnated with a hydrophilic proton conducting polymer additive.

25. (Original) A fuel cell as in claim 23, wherein said polymer additive is formed of substantially the same material as the material of the electrolyte.

26. (Original) A fuel cell as in claim 21, wherein said anode is impregnated with an ionomeric additive.

27. (Currently Amended) A method of forming an anode with an ionomeric additive, comprising:

preparing an electrode structure having a high particles with a surface area greater than 200m<sup>2</sup>/g;

impregnating the ~~high surface area~~ electrode structure with an electrocatalyst and binding said electrocatalyst thereto;

immersing the electrocatalyst-impregnated particles on said electrode structure into a solution containing an ionomeric additive;

removing said electrode structure from said solution, and drying said electrode structure;  
and  
repeating said impregnating, removing and drying step until a desired composition  
electrode structure is obtained.

28. (Original) A method as in claim 27, wherein said electrocatalyst is bound in a  
polytetrafluoroethylene binder.

29. (Currently Amended) A method as in claim 27, wherein said ionomeric additive is a  
fluoropolymer Nafion™ type material.

30. (Original) A method as in claim 27, wherein said impregnating comprises mixing  
electrocatalyst particles with a binder and applying said binder/electrocatalyst onto a backing to  
form a thin layer of greater than substantially 200 meters squared per gram.

31. (cancelled)

32. (cancelled).

33. (Currently Amended) ~~A fuel cell as in claim 32,~~ An aqueous fuel cell, comprising:  
a first electrode operating as an anode, said first electrode being effective to catalyze an  
oxidation reaction of a non-acidic component, and wherein said first electrode includes a  
hydrophilic proton conducting additive;  
a second electrode, operating as a cathode to undergo a reduction reaction of a non-acidic  
component;  
a circulating system, operating to circulate a first organic fuel in an area of said anode;  
and

an electrolyte, comprising a proton conducting membrane ionically coupled with both said first and second electrodes, to passions therebetween.

34. (cancelled)

35. (cancelled)

36. (Currently Amended) A fuel cell as in claim 36, An organic fuel cell, comprising:  
a first chamber;

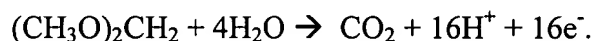
an anode electrode, formed in said first chamber, to have a surface exposed to said first chamber, at least said surface including particles of a material thereon which catalyzes said anode to react with non-acid containing organic fuels, and wherein said anode includes a hydrophilic proton conducting additive;

an electrolyte operatively associated with said anode in a way to allow proton-containing materials to pass from said anode into said electrolyte, said electrolyte comprising a hydrogen ion conducting membrane; and

a cathode electrode, operatively associated with said membrane, to receive said ions from said membrane and to react with a specified material.

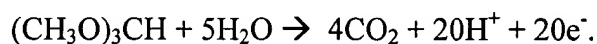
37. (Original) <sup>— C<sub>1</sub> methyl</sup> A method as in claim 7, wherein said methanol derivative is dimethoxymethane mixed with water to a concentration of about .1 to 2 M.

38. (Original) A method as in claim 7, wherein said methanol derivative includes dimethoxymethane, forming an electro chemical reaction of



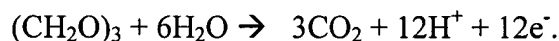
39. (Original) A method as in claim 7, wherein said methanol derivative is trimethoxymethane mixed with water to a concentration of about .1 to 2 M.

40. (Original) A method as in claim 7, wherein said methanol derivative includes trimethoxymethane, forming an electro chemical reaction of



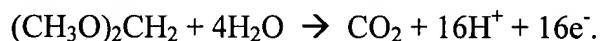
41. (Original) A method as in claim 7, wherein said methanol derivative is trioxane mixed with water to a concentration of about .1 to 2 M.

42. (Original) A method as in claim 7, wherein said methanol derivative includes trioxane, forming an electro chemical reaction of



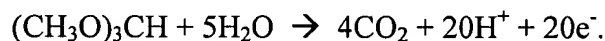
43. (Original) A method as in claim 7, wherein said methanol derivative is dimethoxymethane mixed with water to a concentration of about .1 to 2 M.

44. (Original) A method as in claim 7, wherein said methanol derivative includes dimethoxymethane, forming an electro chemical reaction of



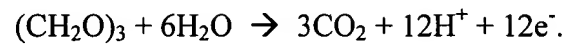
45. (Original) A method as in claim 7, wherein said methanol derivative is trimethoxymethane mixed with water to a concentration of about .1 to 2 M.

46. (Original) A method as in claim 7, wherein said methanol derivative includes trimethoxymethane, forming an electro chemical reaction of



47. (Original) A method as in claim 7, wherein said methanol derivative is trioxane mixed with water to a concentration of about .1 to 2 M.

48. (Original) A method as in claim 7, wherein said methanol derivative includes trioxane, forming an electro chemical reaction of



49. (cancelled)

50. (cancelled)

51. (cancelled)